

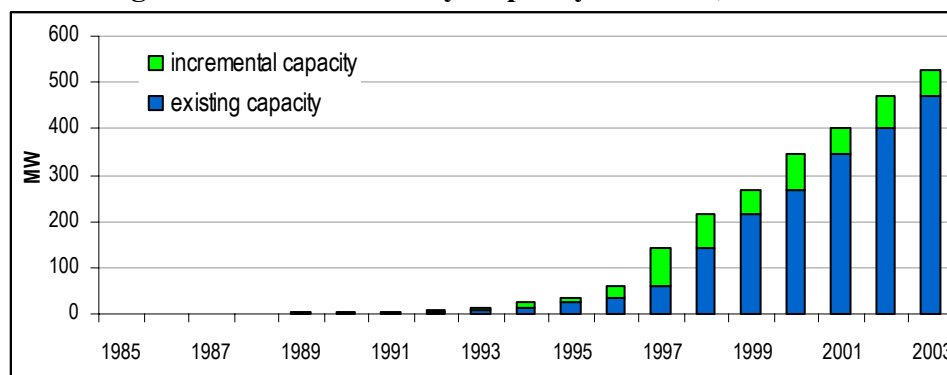
## Conceding Too Much? Conflicts between the Government and Developers in Promoting the China “Wind Concession” Project Model

Joanna I. Lewis  
Energy and Resources Group  
University of California, Berkeley

### Introduction

Grid-connected wind power has been developed in China since the mid-1980s, with about 535 megawatts (MW) of generation capacity on-line at the end of 2003.<sup>1</sup> The development of generation capacity has been steady but slow, with current capacity comprising only a fraction of the estimated 250 gigawatts (GW) of exploitable resources.<sup>2</sup>

Figure 1. Wind Electricity Capacity in China, 1985-2003



A major reason for limited wind energy development is that policy mechanisms designed to support a market for wind power in China have instead been found by developers to be confusing and contradictory. Project approval procedures are unclear, and vary from province to province. Approval for large-scale, often more economically viable projects, must come from the central government and is often difficult to obtain. Information concerning technical details and costs of grid interconnection and transmission is not readily available to potential developers. Long term power purchase agreements (PPA) are rare, and a “cost plus profit” pricing policy has resulted in relatively high tariffs that may fluctuate over time.

Recognizing that one way to promote wind development in China is to provide clear policies, release technical information and to set up mechanisms to facilitate government approval for projects, the Chinese government, led by the National Development and Reform Commission (NDRC), has begun issuing wind resource concessions for government-selected sites through a competitive bidding process to potential developers. Two concessions have been issued to date, and a reported eighteen additional sites are in the pipeline. Approval to develop the selected project site, a 25-year PPA, guaranteed grid interconnection, financial support for grid extension and access roads, and preferential tax and loan conditions will be granted to the winning bidder by the central government. This backing of the central government creates a comparatively lower-risk investment environment for wind farm developers in China

<sup>1</sup> China Badaling Wind Power Information Center website, available: <<http://www.bwp.com.cn>>.

<sup>2</sup> National Renewable Energy Laboratory website, available: <[http://www.nrel.gov/china/wind\\_energy.html](http://www.nrel.gov/china/wind_energy.html)>.

## Concession Program Goals

The primary goal of the wind concession program—from the government's perspective—is to steadily ramp up new wind power capacity at the lowest possible cost while maintaining control over development decisions. After years of high wind electricity tariffs, the government hoped that introducing a competitive bidding process for wind farm development would reveal the true current price of wind power in China. Additional government goals include promoting the technology transfer of advanced wind energy technology, and increasing local manufacturing of wind energy systems and technology components.<sup>3</sup> Anticipated outcomes of the wind concessions include creating an environment that minimizes risk and uncertainty and will eventually lead to large-scale, market-driven development opportunities, as well as providing the government an opportunity for institutional capacity building in the area of wind project development.<sup>4</sup>

Project proposals, along with power tariffs, also were to include detailed information about the wind power technology, the financing arrangements, and the locally manufactured materials that would be used. Government-issued project guidelines requested that proposed projects be 100 MW in size, and use turbines over 600 kW in capacity that consist of over 50% local content.

The NDRC selected two “pilot” wind concession projects to serve as initial experiments for the new concession model. To date, these first two wind concessions have completed the bidding and selection stage, with winning developers currently undergoing final project approval and administrative company registration procedures. These two pilot projects have been hailed as a success by NDRC and consequently three additional projects are set to be announced shortly.<sup>5</sup> However, within NDRC—a large organization representing many mandates and interests—there remains some disagreement over the outcome of the pilot projects as discussed below.

## The Two Pilots

The first two projects, opened for tender in April 2003, are located in Rudong, Jiangsu and in Huilai, Guangdong. NDRC's Energy Bureau solicited bids from any interested developers until September 1, 2003 and selection committees announced winners about one month later.<sup>6</sup>

Rudong is located on Jiangsu's eastern coast. Jiangsu province has no wind farms to date, but is currently planning to develop several new wind farms in part due to a supportive provincial government and utility, and reported interest in locally developing wind power technology. The winning bidder of the Rudong project was the Huarui Investment Group Company, which underbid the next highest tariff by about 0.17 Yuan/kWh (2.1 cents) with a bid of 0.4365 Yuan/kWh (5.3 cents).<sup>7</sup> This caused the selection committee some concern over whether this bid was realistic, however after a re-evaluation of the tariff by both Huarui and by

<sup>3</sup> Fengdian Texu Quanzong he Zhengce Yanjiu Ketu Zhu. *Fengdian Texuquan Zhengce Kuangjia he Yunzuo Fangshi Yanjiu*. (Wind Concession Synthesis and Policy Research Discussion Group. *Wind Concession Policy Framework and Utilization Methodology Research*.) July 2003.

<sup>4</sup> Roger Raufer, Xu Litong, and Wang Shujuan. *Steps Towards a Wind Resource Concession Approach in China*. United Nations Development Programme, June 2003.

<sup>5</sup> As of April 20, 2004, the developer registration formalities for the first two concession projects are being completed, and three more 100 MW concessions have been announced for sites in Inner Mongolia, Jiangsu and Jilin.

<sup>6</sup> Selection committees were assembled for each project that included central and provincial government representatives, as well as the relevant utility, grid company, the national equipment tendering company, and Chinese energy consultants.

<sup>7</sup> PPA is 25 years. Exchange rate of 8.2 Yuan Renminbi = 1 US Dollar.

the government it was accepted as feasible. The proposal has since been approved by the government and the power purchase agreement (PPA) is expected to be signed in the coming months after company registration formalities are completed.<sup>8</sup>

The second concession is located at Huilai's Shibeishan wind farm in Guangdong province. Guangdong is home to about 86 MW of wind capacity—the third largest of China's provinces, as well as the second largest wind farm in China located in Nan'ao. The winning bidder was Yuedian Power Group Company Limited of Guangdong province. The PPA will be signed in the coming months, with construction scheduled to begin soon after. Unlike in the Rudong project where one company's bid was significantly lower than the rest, in the Huilai project the top two bids were very close at 0.5013 and 0.5054 (6.11 and 6.16 cents). This caused additional factors to be used to help determine the winning bidder, including the company's financial conditions and the technical details of the proposal.<sup>9</sup>

The two pilot concession projects received bids from several companies, the results of which are listed in Table 1. Tariffs for previous wind farms in China range from 0.46-1.2 Yuan/kWh (5.6-14.6 cents) with an average of 0.72 Yuan/kWh (8.8 cents).<sup>10</sup> All bids for the two concession projects were lower than the average tariff, with the winning bids well below average and the Huarui bid for Rudong below the lowest existing wind farm tariff in China. This is the primary reason that the concession model was hailed as a success by the NDRC.

**Table 1. Wind Electricity Tariff Bids for Pilot Concession Projects (Yuan/kWh)<sup>11</sup>**

Rudong Concession Bids		Huilai Concession Bids	
Company 1 (Huarui)	0.4365	Company 1 (Yuedian)	0.5013
Company 2	0.6070	Company 2	0.5054
Company 3	0.6087	Company 3	0.5414
Company 4	0.6890	Company 4	0.6753
Company 5	0.7191	Company 5	0.7179
Company 6	0.7150		

There are continuing debates, however, both within NDRC and among wind energy experts over whether the tariff is indeed too low, and whether the project will be able to be completed as proposed. Although both companies risk losing money if they back out of the projects, the penalty is relatively low compared with the potential losses they could face if they develop an uneconomic project. In addition, bidders for the pilot concessions did not have to confirm their choice of turbine technology until after selection, and are not prevented from switching technology after winning the bid as long as the tariff agreed upon remains the same. There currently exists a contradiction between the Chinese government's desire for advanced technology and for local technology, because locally produced turbine technology is several years behind technology being produced in other countries. Since the cost of the Chinese turbines is typically lower and meets localization requirements, the concession project is set up to favor Chinese-made turbines. However, since their quality is uncertain and they have little operating experience, this may hurt the success of the wind farms.

<sup>8</sup> Personal communication with NDRC staff. March and April 2004.

<sup>9</sup> Personal communication with NDRC staff. March and April 2004.

<sup>10</sup> *Ge Fengdianchang Dianjia Shuiping Yilanbiao* (Table of Various Wind Farm Electricity Price Levels), available: <<http://www.xjwind.com>>. As mentioned, tariffs fluctuate over time so estimated average may not be accurate.

<sup>11</sup> Companies arranged from lowest to highest price bid, with company 1 being the winning bidder. The bid listed includes a 33% income tax rate. Company names have been omitted at NDRC's request.

### Stakeholders in the Concession Process

The NDRC Energy Bureau, managing the wind concessions, is currently responsible for approving all major electricity generation projects in China, including all wind farms projects over 50 MW, and for approving electricity tariff rates for power projects. With increasing pressure to find ways to develop additional electricity generation capacity—particularly in parts of China facing supply shortages—it views wind power as an environmentally-friendly part of the solution. It also faces pressure from domestic industry to help instigate demand for locally-manufactured wind energy technology, helping Chinese technology catch up to international advanced turbine technology being manufactured in Europe and the United States. Government programs to promote wind technology development began in the 1990s with limited success. Creating a 50% local content requirement for the government-backed but privately funded concessions is likely to encourage developers—even overseas developers—to purchase complete wind systems from Chinese companies or to partner with Chinese companies to develop or purchase Chinese-sourced system components.

Provincial governments, along with provincial utilities, also want to see a decrease in wind power tariff prices, and are happy to support the development of wind farms in their region that come with funding for needed power infrastructure from the central government. In addition, wind farm development represents a potential channel to bring foreign investment and technology to a region.

Local governments have a somewhat different incentive structure where wind farms or any taxable enterprise is concerned. They collect taxes based on a percentage of the price of the electricity tariff, so they do not mind tariffs being kept high. Many local governments, often working in cooperation with local companies, are interested in developing local wind resources but typically would prefer not to have to compete for the right to develop local land with other outside companies. Local governments have an interest in supporting localized manufacturing of wind turbine technology, seeing wind power as a beneficial local industry since it is looked upon favorably by the central government and is believed to have good potential for future development.

Both foreign and domestic but non-local developers (from provinces other than where the wind farm is located) view the concessions as an “in” to the China market through low-risk projects with a guaranteed PPA and grid connection. In some cases, developers may be willing to underbid to win the rights to develop one of these low-risk but nationally high-profile projects in order to gain recognition in China, and therefore defer profit expectations to future projects.<sup>12</sup> In other cases, however, developers are wary of the concession project model because they do not trust the accuracy of government wind resource measurements, and are wary of investing in their own measurements before they have obtained rights to development. Some developers would prefer to work out an individual arrangement with the government to gain approval to develop a wind project rather than go through a competitive bidding process. The bidding process can require them to release proprietary information that they would prefer to keep confidential, as well as requiring them to bid lower than they would generally need to through a privately-negotiated PPA. Consequently, many developers are already looking for ways to circumvent the requirements of the model rather than necessarily participate in it. For example, developers looking to develop large wind projects or are looking to build in smaller—often less economical—increments over several years so as to avoid being subject to a competitive bidding

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<sup>12</sup> According to interviews, many believe this likely played a role in the low bid that resulted in the Jiangsu pilot concession.

process. Alternatively, in sites where several hundred megawatts of wind power can be developed, it is to the advantage of a developer to get a portion of the site selected for a concession project so that it can benefit from government-subsidized grid extension and roads (if necessary), making subsequent wind farm development more economical.

The fact that government interests and private sector interests are already conflicting could affect the success of the wind concessions. Although it is beneficial that the concessions clearly signal government intentions to developers, they may interfere with the selection of the best wind sites for development. The current concession sites are being selected based on prior wind resource data collected by the government (central, provincial or local), and political interests most certainly play a role as well. However, it is in the government's interest to encourage that wind resource data be collected in as many sites as possible, and that wind farm development be promoted in any sites private developers deem commercially viable, without political interference. It remains to be seen if the projects being developed on selected wind concession sites will turn out to be profitable.

### **Conclusions and Recommendations**

The wind concession model provides needed government support to wind energy development in China. It could be improved through supplemental programs and policies to promote better wind resource measurements and models of technology transfer that encourage collaborative innovation. In order to appease developers and diminish political interference, the private sector should play an increased role in the selection of future wind concession sites. Wherever possible, the current concession process should be streamlined to reduce transaction costs and project lead-time.

In order to ensure that the bidding process best ensures that the goals of the concession—including low tariffs, advanced technology and local materials—are met, the evaluation and selection process needs to include all of these aspects of the proposal. The government should require that developers confirm their arrangements with technology suppliers before submitting a bid, and risk losing the development rights if they vary their proposal after winning. Rather than a fixed percentage localization requirement, project evaluators should design criteria that more flexibly award creative methods for combining advanced international technology with local materials and integrating locally-manufactured components, and particularly methods that include collaborative innovation and development between foreign and Chinese companies.

The wind resource data that is available now in China is limited, as is the meteorological data used by developers to supplement wind resource data measured on site. This limits the ability of developers to be able to accurately predict annual power output from proposed wind farms, and therefore to estimate the cost at which the power can be produced. The government has announced plans to fund additional wind resource data collection. It is important that private developers and consultants familiar with international standards for wind data collection are the recipients of this funding so they can ensure quality and accuracy.

Project size is currently fixed at 100 MW, but there is no economic rationale behind this size—some sites are economic at smaller capacities, and some sites could support much larger wind farms. The government has set a target of 20 GW of wind capacity by 2020, and will have to approve approximately thirteen 100 MW concession projects each year from 2005-2020 if it is to meet this target through this method. This is certainly feasible, but not necessarily efficient. Developers should be able to vary the size of proposed wind farms, selecting what they believe is the most cost-effective project scale.